New Uses for Cotton Waste

Cotton waste as mulch? As fertilizer? For home heating? For cattle feed? It's turning out to be a multiuse product.

Removal of cotton gin waste material is estimated to cost $4 million to $6 million annually. But now new uses for the waste, being tested by ARS scientists and cooperators at Summit Seed, Inc., of Manteno, Illinois, may result in significant savings for the cotton gin industry.

A new hydromulch that includes cotton gin waste and ryegrass seed is being tested in Texas. The waste material is held together by a low-cost process—called COBY, which stands for Cotton Byproducts—invented by ARS scientists. It uses a hot, gelatinized polysaccharide solution that acts as a glue and as a lubricant to smooth the mixture's flow through extrusion equipment.

The scientists are comparing the test hydromulch to three conventional ones for seed germination, cost, and erosion control. Cooperators at Summit Seed are testing a dry formulation for use as a bedding mulch for landscaping use. The cotton gin waste mixture has also been made into pellets and tested as a fuel for pellet-burning stoves, as fertilizer, and as cattle feed**.** *Gregory A. Holt and Michael D. Buser, USDA-ARS Cotton Production and Processing Unit, Lubbock, Texas; phone (806) 746-5353, e-mail gholt@lbk.ars.usda.gov, mbuser @lbk.ars.usda.gov.*

Ghrelin: Key to Chickens' Appetite?

To improve poultry breeding and management practices, scientists are looking for a better understanding and regulation of the genes associated with birds' feed intake and energy balance. They do not yet have a complete understanding of the genetic basis for the regulation of appetite and metabolism in chickens and turkeys. But they moved closer when it was discovered that while the hormone ghrelin boosts appetite in humans, it may have the opposite effect in poultry.

Now scientists have sequenced portions of the gene that produces ghrelin in chickens and turkeys. They are also exploring specific genetic differences between egg-laying and broiler chickens that might account for the significant differences in appetites exhibited by the two types of birds. Selective breeding for lines of chickens and turkeys that grow faster and produce more meat than previous generations has resulted in some unintended changes in feed intake and body composition. Given free access to feed, modern commercial strains of broiler chickens tend to overeat, which can lead to obesity and other health problems. This research may provide insights into controlling or preventing the occurrence of these health concerns. *Mark P. Richards, USDA-ARS Growth Biology Laboratory, Beltsville, Maryland; phone (301) 504-8892, e-mail richards@anri.barc.usda.gov.*

Put Some Meat on Those Bones!

In a controlled-diet study of 15 healthy postmenopausal women, ARS scientists found that a high-meat diet—even with low but average calcium intake—didn't inhibit women's retention of calcium.

In the crossover study, the women consumed either a high- or low-meat diet for 8 weeks. The high-meat diet consisted of 20 percent of daily calories as protein, including 10.5 ounces of meat. The low-meat diet consisted of 12 percent of daily calories as protein, including only 1.5 ounces of meat. Tracking of calcium levels began after 4 weeks of adjustment to the diet for each 8-week phase. Scientists will do additional studies to confirm these results and to corroborate an additional finding that high-protein diets in combination with the recommended 1,200 milligrams of daily calcium may benefit bones. *ZamZam (Fariba) Roughead, USDA-ARS Grand Forks Human Nutrition Research Center, Grand Forks, ND; phone (701) 795-8463, e-mail froughea@ars.usda.gov.*

Helping Turkeys Breathe Easier

Early detection of avian metapneumovirus in turkey flocks would allow producers to take action that would reduce potential losses in young birds. At around 6-12 weeks of age, they are especially vulnerable to an upper respiratory illness called turkey rhinotracheitis. Something like a bad cold, it makes them cough and sneeze and results in swollen sinuses and nasal discharge. Chicken and turkey flocks around the world are vulnerable, but it seems to often be reported in turkeys in Minnesota and several European countries.

Although avian metapneumovirus isn't very virulent by itself, it can lead to severe respiratory disease and weight loss in birds exposed to other pathogens or to Newcastle disease vaccines. Now researchers have identified an important gene sequence that can help identify and differentiate avian metapneumovirus. Previously unrecorded in genetic databases, the sequence could be used to develop a diagnostic detection kit. Early detection would allow better timing of Newcastle disease virus vaccination to prevent this complication. A patent application for the gene sequence was filed in November 2002, and the technology is available for licensing. *Bruce S. Seal and Rene Alvarez, USDA-ARS Southeast Poultry Research Laboratory, Athens, Georgia; phone (706) 546-3463, e-mail bseal@seprl.usda.gov, ralvarez@seprl.usda.gov.*